

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A sortation assembly for sorting articles and depositing articles into trays, said sortation assembly comprising:

a plurality of chutes movable along a continuous loop, said chutes being movable along and over a plurality of sort stations and being operable to deposit articles to trays positioned at said sort stations, said sort stations being configured to support a tray thereon for filling of the tray by said chutes; and

at least one sensor positioned at each of said chutes, said at least one sensor being operable to detect a fill level in a tray at a respective one of said sort stations, said at least one sensor being spaced from the tray positioned at said respective one of said sort stations and being spaced from the articles deposited in the tray, said at least one sensor being operable to generate an output signal indicative of the fill level within the tray, said chutes being operable at least partially in response to said output signal of said sensors.

2. The sortation assembly of claim 1, wherein said at least one sensor is operable to detect a distance between said sensor and the tray or articles in the tray positioned at said respective one of said sort stations to determine a fill level within the tray, said at least one sensor being operable to generate an output signal indicative of said distance.

3. The sortation assembly of claim 1, wherein said at least one sensor comprises at least one diffuse electronic sensor.

4. The sortation assembly of claim 3, wherein said at least one diffuse electronic sensor comprises multiple diffuse electronic sensors.

5. The sortation assembly of claim 4, wherein said multiple diffuse electronic sensors are operable to generate an output at different trigger points or fill levels, said output signal of each of said multiple diffuse electronic sensors being indicative of a different fill level of the tray.

6. The sortation assembly of claim 3, wherein said output signal comprises an analog output which varies in voltage as the fill level of the tray changes.

7. The sortation assembly of claim 1, wherein said at least one sensor comprises a laser sensor operable to generate said output signal in response to multiple distances between said sensor and articles within the tray.

8. The sortation assembly of claim 7, wherein said laser sensor is operable to generate said output signal in response to multiple trigger points.

9. The sortation assembly of claim 1 including a tray present sensor positioned at a respective one of said sort stations, said tray present sensor being operable to detect a presence of a tray at said respective sort station and being operable to generate an output signal indicative of a presence of a tray at said respective sort station, said chutes being operable at least partially in response to said output signals of said tray present sensors.

5 10. The sortation assembly of claim 9, wherein said tray present sensor is spaced from the tray positioned at said respective sort station.

11. The sortation assembly of claim 10, wherein said tray present sensor is operable to detect a distance between said tray present sensor and a tray positioned at said respective sort station.

12. The sortation assembly of claim 11, wherein said tray present sensor comprises a diffuse electronic sensor.

13. The sortation assembly of claim 1, wherein said at least one sensor is generally fixedly mounted to said chute.

14. A sortation assembly for sorting articles and depositing articles into trays, said sortation assembly comprising:

5 a plurality of chutes movable along a continuous loop, said chutes being movable along and over a plurality of sort stations and being operable to deposit articles to trays positioned at said sort stations, said sort stations being configured to support a tray thereon for filling of the tray by said chutes; and

10        a tray present sensor positioned at a respective one of said sort stations, said tray present sensor being operable to detect a presence of a tray at said respective sort station, said tray present sensor being operable to generate an output signal indicative of whether or not a tray is present at said respective sort station, said tray present sensor being spaced from a tray positioned at said respective sort station, said chutes being operable at least partially in response to said output signals of said tray present sensors.

15.      The sortation assembly of claim 14, wherein said tray present sensor is operable to detect a distance between said tray present sensor and a tray positioned at said respective sort station.

16.      The sortation assembly of claim 15, wherein said tray present sensors comprise diffuse electronic sensors.

17.      The sortation assembly of claim 14, wherein said tray present sensor is generally fixedly mounted at said respective sort station.

18.      The sortation assembly of claim 14 including at least one fill level sensor operable to detect a fill level in a tray at said sort station at which said at least one fill level sensor is positioned, said at least one fill level sensor being operable to generate an output signal indicative of the fill level within the tray, said chutes being operable at least partially in response to said output signal of a respective one of said at least one fill level sensor.

19.      The sortation assembly of claim 18, wherein said at least one fill level sensor is mounted to a respective one of said chutes and is spaced from the tray and from the articles deposited in the tray at which the respective chute is positioned.

20.      The sortation assembly of claim 19, wherein said at least one fill level sensor is operable to detect a distance between said fill level sensor and the tray or articles in the tray positioned at a respective one of said sort stations to determine a fill level within the tray, said at least one fill level sensor being operable to generate an output signal indicative of said distance.

21. The sortation assembly of claim 20, wherein said at least one fill level sensor comprises at least one diffuse electronic sensor.
22. The sortation assembly of claim 21, wherein said at least one diffuse electronic sensor comprises multiple diffuse electronic sensors.
23. The sortation assembly of claim 22, wherein said multiple diffuse electronic sensors are operable to generate an output at different trigger points or fill levels, said output signal of each of said multiple diffuse electronic sensors being indicative of a different fill level of the trays.
24. The sortation assembly of claim 21, wherein said output signal comprises an analog output which varies in voltage as the fill level of the tray changes.
25. The sortation assembly of claim 20, wherein said at least one fill level sensor comprises a laser sensor operable to generate said output signal in response to multiple distances between said fill level sensor and articles within the tray.
26. The sortation assembly of claim 25, wherein said laser sensor is operable to generate said output signal in response to multiple trigger points.